

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3586

THE ATCHISON, TOPEKA AND SANTA FE
RAILWAY COMPANY

IN RE ACCIDENT

AT LOMAX, ILL., ON

AUGUST 22, 1954

SUMMARY

Date: August 22, 1954

Railroad: Atchison, Topeka and Santa Fe

Location: Lomax, Ill.

Kind of accident: Derailment

Train involved: Passenger

Train number: 19

Engine number: Diesel-electric units 27C, 27B, 27A,
and 27

Consist: 13 cars

Speed: 89 m. p. h.

Operation: Interlocking

Track: Double; tangent; 0.33 percent
descending grade westward

Weather: Clear

Time: 12:49 p. m.

Casualties: 4 killed; 49 injured

Cause: Broken equalizer on passenger-car truck

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3586

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS
UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY

September 21, 1954

Accident at Lomax, Ill., on August 22, 1954, caused by a
broken equalizer on a passenger-car truck.

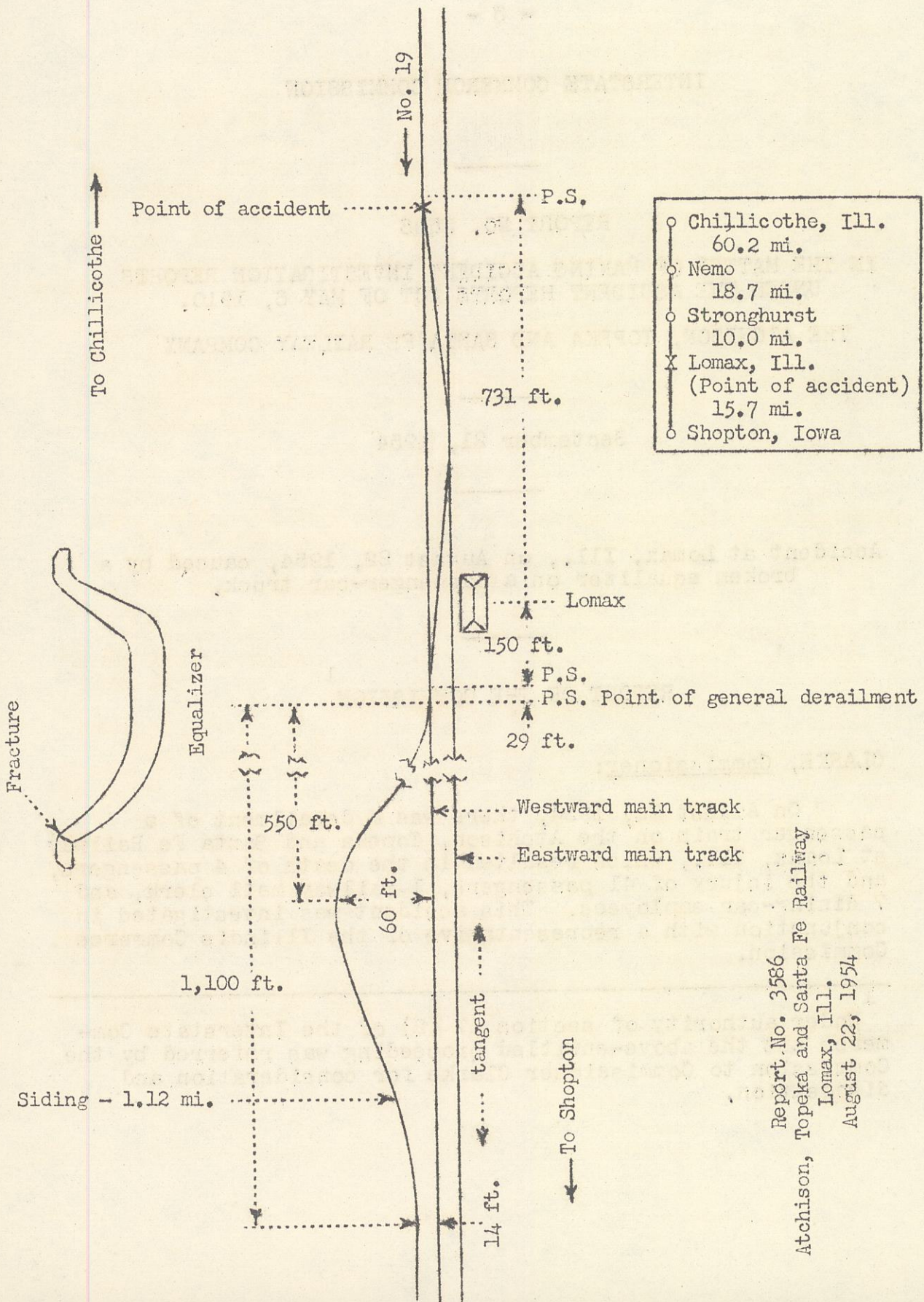
REPORT OF THE COMMISSION¹

CLARKE, Commissioner:

On August 22, 1954, there was a derailment of a passenger train on the Atchison, Topeka and Santa Fe Railway at Lomax, Ill., which resulted in the death of 4 passengers, and the injury of 41 passengers, 1 railway mail clerk, and 7 dining-car employees. This accident was investigated in conjunction with a representative of the Illinois Commerce Commission.

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Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Clarke for consideration and disposition.



Report No. 3586
Atchison, Topeka and Santa Fe Railway
Lomax, Ill.
August 22, 1954

Location of Accident and Method of Operation

This accident occurred on that part of the Illinois Division extending between Chillicothe, Ill., and Shopton, Iowa, 104.6 miles. In the vicinity of the point of accident this is a double-track line, over which trains are operated in either direction on either track by automatic cab-signal indications and an automatic train-control system of the three-speed continuous-inductive type. There are no wayside signals except at interlockings. From south to north the main tracks are designated as eastward main track and westward main track. At Lomax, Ill., 88.9 miles west of Chillicothe, the east switch of a facing-point crossover which connects the two main tracks is located 731 feet east of the station, and the west switch of a trailing-point crossover which connects the two main tracks is located 150 feet west of the station. West of these crossovers, a siding 1.12 miles in length is located north of the westward main track. The east siding-switch is 29 feet west of the west switch of the trailing-point crossover. All of these switches are within interlocking limits. The siding and the westward main track are separated a maximum distance of approximately 60 feet at a point 550 feet west of the east siding-switch. West of a point 1,100 feet west of the east siding-switch, the siding and the westward main track are laid on 14-foot track centers. When the accident occurred there were 100 freight cars on the siding. The accident occurred on the westward main track at the east turnout of the facing-point crossover. The main tracks are tangent throughout a distance of 1.06 miles immediately east of the point of accident and a considerable distance westward. The grade is 0.33 percent descending westward at the point of accident.

In the vicinity of the point of accident the track structure consists of 131-pound rail, 39 feet in length, laid new in 1943 on an average of 24 treated ties to the rail length. It is fully tieplated with double-shoulder canted tieplates, spiked with two rail-holding spikes and two plate-holding spikes per tieplate, and is provided with 4-hole 24-inch joint bars and an average of 12 rail anchors per rail. It is ballasted with slag and gravel to a depth of 18 inches below the bottoms of the ties. Both crossovers at Lomax are constructed with No. 20 turnouts.

This carrier's operating rules read in part as follows:

TRAIN AND YARD SERVICE.

815. * * *

Trainmen must inspect their trains frequently while running and when standing, to detect hot journals, stuck brakes and other defects. They must observe meeting and passing trains to detect and call attention to anything that might endanger the operation of such trains, * * *

ENGINEMEN AND FIREMEN.

891. They must look back frequently, and especially while rounding curves * * * to detect any defects in their train * * *

Operators.

918. When their duties permit, they will be outside to observe passing trains. If anything is seen which might endanger the same, stop signals will be given and the incident reported to train dispatcher.

The maximum authorized speed for passenger trains is 90 miles per hour.

Description of Accident

No. 19, a west-bound first-class passenger train, consisted of Diesel-electric units 27C, 27B, 27A, and 27, coupled in multiple-unit control, one mail car, one club-baggage car, five chair cars, two dining cars, one lounge car, and three sleeping cars, in the order named. The second car was of conventional all-steel construction, and the other cars were of lightweight steel construction. The second car was equipped with type E couplers, the eleventh and twelfth cars were equipped with tightlock couplers, and the other cars were equipped with controlled slack couplers. This train passed Stronghurst, 10.0 miles east of Lomax and the last open office, at 12:42 p. m., 18 minutes late. While moving at a speed of 89 miles per hour the rear truck of the second car was derailed

at the east turnout of the facing-point crossover at Lomax, and the rear truck of the first car, the front truck of the second car, and the third to the thirteenth cars, inclusive, were derailed in the vicinity of the east siding-switch.

The locomotive and the first two cars stopped with the front of the locomotive 3,029 feet west of the east siding-switch. The rear truck of the first car and both trucks of the second car was derailed to the north. These cars stopped upright and approximately in line with the track. A separation occurred between the second and the third cars. The third car apparently struck the cars on the siding at a point about 550 feet west of the east siding-switch. It turned end for end and stopped on its left side, against the cars on the siding, with the rear end 680 feet west of the east siding-switch. The other derailed cars remained upright. The couplers at the rear end of the third car and at the front end of the fourth car were broken. The fourth car stopped with the front end 846 feet west of the east siding-switch and 17 feet south of the westward main track; the rear end was 13 feet north of that track. The fifth to the tenth cars, inclusive, stopped in diagonal positions between the westward main track and the siding. The eleventh, twelfth, and thirteenth cars stopped approximately in line with the westward main track. The first car was slightly damaged. The right side of the second car was badly damaged as a result of raking the sides of freight cars on the siding. The entire superstructure and the appurtenances below the floor level of the third car were badly damaged. The right side of the fourth car was somewhat damaged. The right side of the fifth car was badly damaged. The sixth to the eleventh cars, inclusive, were somewhat damaged, and the twelfth and thirteenth cars were slightly damaged. Fourteen of the cars on the siding were derailed or off center, and 29 other cars were damaged as a result of having been struck or raked by derailed equipment.

The weather was clear at the time of the accident, which occurred at 12:49 p. m.

A.T. & S.F. 1301, the second car of No. 19, is a club-baggage car of conventional all-steel construction. It was built in 1927 and is 84 feet 3-1/2 inches in length between the coupler faces. The light weight is 191,980 pounds. It is equipped with six-wheel trucks spaced 59 feet 6-3/4 inches between truck centers. The wheelbase of each truck is 11 feet. The trucks are of the inside swing-hanger drop-equalizer

type. The specified diameter of the wheels is 36 inches. The journals are 5-1/2 inches by 10 inches and are provided with roller bearings. The car is equipped with U C clasp-type brake equipment. The spring arrangement consists of elliptical bolster springs and one helical spring seated upon each equalizer.

Discussion

As No. 19 was approaching the point where the accident occurred the speed was 89 miles per hour, as indicated by the tape of the speed-recording device. The enginemen were maintaining a lookout ahead from the control compartment at the front of the locomotive. The flagman was in the rear car. The conductor entered the second car soon after the train passed Stronghurst. He said that when the car was in the immediate vicinity of the station at Lomax he heard ballast striking the bottom of the car. Prior to this time the car had been riding smoothly and there had been no unusual noise or other indication of defective equipment. When he heard the ballast striking the car, he started toward the conductor's valve at the rear of the car. The general derailment occurred before he reached the valve. The enginemen were not aware that anything was wrong until the brakes became applied in emergency as a result of the derailment.

Examination of the track after the accident occurred disclosed that a crossing 6.79 miles east of the initial point of derailment had been marked by dragging equipment. This mark was 9-3/4 inches south of the gage side of the south rail of the westward main track, 2-3/4 inches wide, and 11-1/4 inches long. The top of the south rail of a trailing-point crossover 6.22 miles east of the point of derailment was marked 8-1/2 inches south of the gage side of the south rail of the westward main track. Between this crossover and the point of derailment marks were found on motor-car set-offs and crossings. These marks were from 9 to 10 inches south of the gage side of the south rail, from 2-3/4 to 3 inches wide, and extended the full length of the planks in the set-offs and crossings. Beginning at a point 7 inches east of the heel block of the east switch of the facing-point crossover at Lomax, the outside of the head of the south rail of the crossover was marked, and throughout a distance of several rail-lengths this rail was displaced and pulled toward the south rail of the westward main track. Beginning at a point 161 feet west of the first mark on the rail, marks on the ties indicated that a wheel had become derailed on each side of each rail. These marks continued in line with the track to the west switch of the trailing-point crossover. Two of the closure rails at this turnout were overturned, and the north switch-point was badly damaged. There were numerous marks on the

ties between this switch and the east siding-switch, and the east siding-switch was badly damaged. The general derailment occurred in the immediate vicinity of the latter switch.

Examination of the equipment of No. 19 after the accident occurred disclosed that the rear equalizer on the south side of the rear truck of A.T. & S.F. 1301, the second car in the train, was broken behind the No. 9, or middle, journal box location. After this break occurred, the front end of the equalizer dropped downward and became wedged against the side of the journal box. The marks on the track structure indicate that the bottom of the equalizer was approximately level with the tops of the rails throughout a distance of 6.79 miles east of the point of derailment, and that when the train passed the east switch of the facing-point crossover at Lomax the front end of the equalizer had worked downward sufficiently to permit the inside surface near the bottom of the equalizer to engage the outside of the head of the south rail of the crossover. When this occurred, the front wheels of this truck became derailed to one side of the rails and the rear wheels to the opposite side. The general derailment occurred as a result of damage to the west switch of the trailing-point crossover and the east switch of the siding.

The failure of the equalizer occurred $4\frac{1}{8}$ inches from the front end, at a point just behind the fillet of the foot section over the No. 9 journal box. The end which was broken off was not recovered. At the point of failure the cross-sectional area was $3\frac{1}{4}$ inches by $3\frac{1}{4}$ inches. The appearance of the metal at the break indicated that a progressive fracture had existed for some time. This fracture was approximately $\frac{1}{4}$ inch deep and extended between points $\frac{7}{8}$ inch and $1\frac{7}{8}$ inches from the outside edge of the equalizer. A secondary fracture which showed evidence of rapid development extended across the width of the bottom face of the equalizer to an average depth of $\frac{7}{16}$ inch. The old progressive fracture and the secondary fracture covered approximately 2 percent and 11 percent, respectively, of the cross-sectional area of the fractured surface. The remainder of the fracture appeared to be new. The old fracture was in a location in which it could not be detected by routine inspection. The bottom edge of the fractured face was battered to the extent that the nature of the origin of the old progressive fracture could not be determined. Worn areas on both side faces of the equalizer in the vicinity of the fracture had been built up by welding, but no evidence of welding at the origin of fracture could be detected. Laboratory analysis disclosed that the chemical content of the metal met the requirements of the carrier's specifications.

A.T.& S.F. 1301 last received general overhauling during the months of January, February, and March, 1954, at Topeka, Kans. At this time the equalizers were removed and a magnetic particle test was made. No defective condition was indicated. Between March 1954 and the day of the accident the accumulated mileage was 16,432. The equipment of No. 19 was inspected by members of the mechanical department before the train departed from Chicago, Ill., 218.9 miles east of the point of accident, and was inspected by members of the crew as it moved on curves at various points en route. The south side of the train was inspected by the operator at Nemo, 28.7 miles east of the point of accident, the north side was inspected by the operator at Stronghurst, and the south side was inspected by the fireman and the flagman as the train moved on a curve to the left approximately 1 mile east of Lomax. No defective condition was observed.

Cause

This accident was caused by a broken equalizer on a passenger-car truck.

Dated at Washington, D. C., this twenty-first day of September, 1954.

By the Commission, Commissioner Clarke.

(SEAL)

GEORGE W. LAIRD,
Secretary.